Docket No. 5634.127

## IE UNITED STATES PATENT AND TRADEMARK OFFICE

**Inventors:** 

John C. Harvey and James W.

Cuddihy

Serial No.:

08/447,712

Filing Date: May 23, 1995

For:

Signal Processing Apparatus and

Methods

Group Art Unit: 2602

Examiner:

Assistant Commissioner of Patents

Washington D.C. 20231

### SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56(a) and in conformance with the procedures of 37 C.F.R. §§ 1.97-98 and M.P.E.P. § 609, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached Form PTO-1449.

The above-referenced application claims priority under 35 U.S.C. § 120 of the following applications:

Serial No. Filing Date Patent	110.
08/113,329 August 30, 1993 Pendin	g
08/056,501 May 3,1993 5,335,2	<del>7</del> 7
07/849,226 March 10, 1992 5,233,6	54
07/588,126 September 25, 1990 5,109,4	14
07/096,096 September 11, 1987 4,965,8	25

Applicants believe that all references cited on the attached PTO 1449 form were cited by or submitted to the PTO in one or more of the cases cited above or in U.S. Patent Application Serial No. 06/829,531, filed February 15, 1986 now U.S. Patent No. 4,704,725 and/or U.S. Patent Application Serial No. 06/317,510, filed November 3, 1981 now U.S. Patent No. 4,694,490. Therefore, no copies of the listed references are provided herewith. It is respectfully requested that the information above be expressly considered during the prosecution of this Application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

#### **CERTIFICATION AND/OR FEE**

Since this IDS is being filed pursuant to 37 C.F.R § 1.97(b) before the later of three months after the filing date of the above-referenced application or the date of receipt of the first Office Action on the merits, no certification or fee is required.

Respectfully submitted,

Thomas J. Scott, Jr. (Reg. No. 27,836)

Dated: December 15, 1995

HOWREY & SIMON 1299 Pennsylvania, N.W. Washington, D.C. 20004-2402 (202) 783-0800 (telephone) (202) 383-6610 (telcopier)

PTO 1449 INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Attorney Docket No. 5634.127	Serial No. 08/447,712
	Applicants John C. Harvey and James W. Cuddih	
Title: Signal Processing Apparatus	Filing Date:	Group:
and Method	May 23, 1995	2602

# **U.S. Patent Documents**

EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	2,511,085	June 13, 1950	Smith	179/1	
	2,573,349	Oct. 30, 1951	Miller et al.	177/353	
	2,769,023	Oct. 30, 1956	Loew et al.	178/5.1	
	2,788,387	Apr. 9, 1957	Druz	178/5.1	
	2,864,885	Dec. 16, 1958	Morris	178/5.1	
	2,866,962	Dec. 30, 1958	Ellet	340/147	
	3,016,091	Jan. 9, 1962	Daniele	162/391	
	3,071,642	Jan. 1, 1963	Mountjoy et al.	178/5.1	
	3,213,201	Oct. 19, 1965	Flood et al.	179/15	
	3,238,297	Mar. 1, 1966	Pawley et al.	178/22	
	3,363,250	Jan. 9, 1968	Jacobson	343/225	
	3,493,674	Feb., 1970	Houghton	178/5.6	
	3,531,586	Sept. 29, 1970	Bass et al.	178/6	
	3,536,833	Oct. 27, 1970	Guanella	178/22	
	3,569,937	Mar. 9, 1971	Hoetter	340/171	
	3,573,747	Apr. 6, 1971	Adams et al.	340/172.5	
	3,584,142	June 8, 1971	Schoeffler	178/6.8	
	3,601,528	Aug. 24, 1971	McVoy	178/5.1	
	3,609,697	Sept. 28, 1971	Blevins et al.	340/172.5	
	3,657,699	Apr. 18, 1972	Rocher et al.	340/146.1	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	3,659,046	Apr. 25, 1972	Angeleri et al.	178/22	
	3,668,307	June 6, 1972	Face et al.	178/5.6	
	3,684,823	Aug. 15, 1972	McVoy	178/5.1	
	3,693,090	Sept. 19, 1972	Gabriel	325/308	
	3,703,684	Nov. 21 1972	McVoy	325/31	·
	3,725,672	Apr. 3, 1973	Reuter	307/208	
	3,729,581	Apr. 24, 1973	Anderson	178/6.8	
	3,731,197	May 1, 1973	Clark	325/32	
	3,733,430	May 15, 1973	Thompson et al.	178/5.1	
	3,736,369	May 29, 1973	Vogelman et al.	178/5.1	
	3,749,845	July 31, 1973	Fraser	1 <b>7</b> 9/15	
	3,752,908	Aug. 14, 1973	Boenke et al.	178/5.6	
	3,757,225	Sep. 4, 1973	Ukicki	325/308	
	3,773,977	Nov. 20, 1973	Guanella	179/1.5	
	3,777,053	Dec. 4, 1973	Wittig et al.	178/5.1	
	3,789,137	Jan. 29, 1974	Newell	178/6.6	
	3,790,700	Feb. 5, 1974	Callais et al.	178/5.1	
	3,798,359	Mar. 19, 1974	Feistel	178/22	
	3,798,610	Mar. 19, 1974	Bliss et al.	340/172.5	
	3,803,491	Apr. 9, 1974	Osborn	325/53	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	3,806,814	Apr. 23, 1974	Forbes	325/309	
	3,819,852	June 25, 1974	Wolf	178/5.6	
	3,824,332	July 16, 1974	Horowitz	178/5.1	
	3,824,467	July 16, 1974	French	325/32	
	3,825,893	July 23, 1974	Bossen et al.	340/146.1	
	3,833,757	Sept. 3, 1974	Kirk, Jr. et al.	178/5.6	
	3,835,387	Sep. 10, 1974	Rookes et al.	325/55	·
	3,842,196	Oct. 15, 1974	Louglin	358/12	
	3,845,391	Oct. 29, 1974	Crosby	325/64	
	3,848,193	Nov. 12, 1974	Martin et al.	325/53	
	3,882,392	May 6, 1975	Harney	325/53	
	3,885,089	May 20, 1975	Callais et al.	178/5.1	
	3,886,302	May 27, 1975	Kosco	178/5.1	
	3,886,454	May 27, 1975	Oakley et al.	325/52	
	3,890,461	June 17, 1975	Vogelman et al.	178/5.1	
	3,891,792	June 24, 1975	Kimura	178/5.8R	
	3,893,031	July 1, 1975	Majeau et al.	325/32	
	3,894,176	July 8, 1975	Mellon	178/5.1	
	3,899,633	Aug. 12, 1975	Sorenson et al.	178/5.1	
	3,911,216	Oct. 7, 1975	Bartek et al.	178/22	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	3,914,534	Oct. 21, 1975	Forbes	178/5.1	
	3,916,091	Oct. 28, 1975	Kirk, Jr. et al.	178/5.1	
	3,919,462	Nov. 11, 1975	Hartung et al.	178/5.1	
	3,921,151	Nov. 18, 1975	Guanella	340/172.5	
	3,924,187	Dec. 2, 1975	Dormans	325/52	
	3,934,079	Jan. 20, 1976	Barnhart	178/5.1	
	3,936,593	Feb. 3, 1976	Aaronson et al.	178/5.1	
	3,936,594	Feb. 3, 1976	Schubin et al.	178/5.1	
	3,936,595	Feb. 3, 1976	Yanagimachi et al.	178/5.6	
	3,943,447	Mar. 9, 1976	Shomo, III	325/308	
	3,947,882	Mar. 30, 1976	Lightner	360/92	
	3,949,313	Apr. 6 1976	Tamada et al.	329/106	
	3,956,615	May 11, 1976	Anderson et al.	235/61.7B	_
	3,970,790	July 20, 1976	Guanella	179/1.5S	
	3,975,583	Aug. 17, 1976	Meadows	175/5.6	
	3,978,449	Aug. 31, 1976	Sanders et al.	340/146.1	
	3,987,398	Oct. 19, 1976	Fung	325/309	
	3,988,528	Oct. 26, 1976	Yanagimachi et al.	178/5.6	
	3,997,718	Dec. 14, 1976	Ricketts et al.	178/6.8	
	4,024,574	May 17, 1977	Nieson	358/117	

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	4,025,851	May 24, 1977	Hazelwood et al.	325/31	
	4,025,947	May 24, 1977	Michael	358/86	
	4,025,948	May 24, 1977	Loshin	358/122	
	4,031,548	June 21, 1977	Kato et al.	358/188	
	4,048,619	Sept. 13, 1977	Forman, Jr. et al.	340/154	
	4,049,906	Sept. 20, 1977	Hafner et al.	178/2C	
	4,054,911	Oct. 18, 1977	Fletcher et al.	358/141	
	4,058,830	Nov. 15, 1977	Gulnet et al.	358/86	
	4,068,264	Jan. 10, 1978	Pires	358/122	
	4,079,419	Mar. 14, 1978	Siegle et al.	358/193	
	4,081,612	Mar. 28, 1978	Hafner	179/15BA	
	4,081,753	Mar. 28, 1978	Miller	325/396	
	4,081,831	Mar. 28, 1978	Tang et al.	358/114	
	4,091,417	May 23, 1978	Nieson	358/117	
	4,104,486	Aug. 1, 1978	Martin et al.	179/2	
	4,107,735	Aug. 15, 1978	Frohbach	358/84	
	4,112,464	Sept. 5, 1978	Gulf et al.	358/122	
	4,115,662	Sept. 19, 1978	Gulnet et al.	179/15BV	
	4,115,807	Sept 19, 1978	Pires	358/122	
	4,120,030	Oct. 10, 1978	Johnstine	364/200	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	4,130,833	Dec. 19, 1978	Choenet	358/122	
	4,131,881	Dec. 26, 1978	Robinson	340/167R	
	4,138,726	Feb. 6, 1979	Girault et al.	364/521	
	4,160,120	July 3, 1979	Barnes et al.	178/22	
	4,161,751	July 17, 1979	Ost	358/114	
	4,163,254	July 31, 1979	Block et al.	358/122	
	4,163,255	July 31, 1979	Pires	358/122	
	4,168,396	Sept. 18, 1979	Best	178/22	
	4,170,782	Oct. 9, 1979	Miller	358/84	
	4,171,513	Oct. 16, 1979	Otey et al.	325/32	
	4,172,213	Oct. 23, 1979	Barnes et al.	178/22	
	4,186,413	Jan. 29, 1980	Mortimer	358/146	
	4,196,310	Apr. 1, 1980	Forman et al.	178/22	
	4,200,770	Apr. 29, 1980	Hellman et al.	178/22	
	4,200,913	Apr. 29, 1980	Kuhar et al.	364/900	
	4,205,343	May 27, 1980	Barrett	358/147	
	4,213,124	July 15, 1980	Barda et al.	340/706	
	4,215,366	July 29, 1980	Davidson	358/124	
	4,215,370	July 29, 1980	Kirk, Jr.	358/146	
	4,225,884	Sept. 30, 1980	Block et al.	358/122	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	4,225,967	Sep. 30, 1980	Miwa et al.	455/68	
	4,230,990	Oct. 28, 1980	Lert, Jr et al.	455/67	
	4,232,193	Nov. 4, 1980	Gerard	179/1.5R	
	4,236,217	Nov. 25, 1980	Kennedy	364/483	
	4,237,484	Dec. 2, 1980	Brown et al.	358/142	
	4,245,245	Jan. 13, 1981	Matsumoto et al.	358/122	-
	4,247,106	Jan. 27, 1981	Jeffers et al.	273/85G	
	4,250,524	Feb. 10, 1981	Tomizawa	358/122	
	4,253,114	Feb. 24, 1981	Tang et al.	358/114	
	4,253,157	Feb. 24, 1981	Kirschner et al.	364/900	
	4,262,329	Apr. 14, 1981	Bright et al.	364/200	
	4,264,924	Apr. 28, 1981	Freeman	358/86	
	4,264,925	Apr. 28, 1981	Freeman et al.	358/86	
	4,266,243	May 5, 1981	Shutterly	358/121	:
	4,275,411	June 23, 1981	Lippel	358/13	
	4,283,602	Aug. 11, 1981	Adams et al.	179/1.5R	
	4,284,976	Aug. 18, 1981	Gable et al.	340/147	
	4,286,281	Aug. 25 1981	Suzuki	358/4	
	4,287,592	Sept. 1, 1981	Paulish et al.	370/88	
	4,288,809	Sept. 8, 1981	Yabe	358/12	

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	4,290,141	Sept. 15, 1981	Anderson et al.	455/2	
	4,290,142	Sept. 15, 1981	Schnee et al.	455/3	
	4,292,650	Sept. 29, 1981	Henderickson	358/173	
	4,295,223	Oct. 13, 1981	Shutterly	455/72	
	4,302,771	Nov. 24, 1981	Gargini	358/86	July 23, 1980
	4,304,990	Dec. 8, 1981	Atalla	235/380	Feb. 4, 1980
	4,305,101	Dec. 8, 1981	Yarbrough et al.	360/69	Apr. 16, 1979
	4,305,131	Dec. 8, 1981	Best	364/521	
	4,305,131	Dec. 8, 1981	Best	364/521	Mar. 31, 1980
	4,306,289	Dec. 15, 1981	Lumley	364/200	Feb. 4, 1980
	4,306,305	Dec. 15, 1981	Doi et al.	371/38	Oct. 19, 1979
	4,307,446	Dec. 22, 1981	Barton et al.	364/200	May 2, 1979
	4,310,854	Jan. 12, 1982	Baer	358/143	Aug. 29, 1979
	4,312,016	Jan. 19, 1982	Glaab et al.	358/188	Feb. 2, 1979
	4,313,132	Jan. 26, 1982	Doles et al.	358/114	Oct. 31, 1979
	4,314,367	Feb. 2, 1982	Bakka et al.	370/60	Jan. 17, 1980
	4,316,055	Feb. 16, 1982	Feistel	178/22.06	Dec. 30, 1976
	4,316,245	Feb. 16, 1982	Luu et al.	364/200	Dec. 7, 1978
	4,318,125	Mar. 2, 1982	Shutterly	358/121	Apr. 25, 1979
	4,319,079	Mar. 9, 1982	Best	178/22.09	Jan. 17, 1980

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	4,322,745	Mar. 30, 1982	Saeki et al.	358/123	Mar. 21, 1980
	4,323,921	Apr. 6, 1982	Guillou	358/114	Jan. 23, 1980
	4,323,922	Apr. 6, 1982	den Toonder et al.	358/117	Dec. 17, 1979
	4,325,078	Apr. 13, 1982	Seatom et al.	358/117	Nov. 20, 1979
	4,329,675	May 11, 1982	Van Hulle	358/86	Sep. 23, 1980
	4,329,684	May 11, 1982	Monteath et al.	340/707	Jan. 15, 1980
	4,331,973	May 25, 1982	Eskin et al.	358/84	Oct. 20, 1980
	4,331,974	May 25, 1982	Cogswell et al.	358/86	Oct. 21, 1980
	4,332,980	June 1, 1982	Reynolds et al.	179/2A	May 30, 1980
	4,333,152	June 1, 1982	Best	364,521	June 13, 1980
	4,334,242	June 8, 1982	Mangold	358/127	Jan. 14, 1980
	4,336,553	June 22, 1982	den Toonder et al.	358/120	May 14, 1980
	4,336,559	June 22, 1982	Koyama et al.	360/73	Nov. 9, 1978
	4,337,480	June 29, 1982	Bourassin et al.	358/93	Feb. 8, 1990
	4,337,483	June 29, 1982	Guillou	358/114	Jan. 31, 1980
	4,338,628	July 6, 1982	Payne et al.	358/120	Dec. 19, 1979
	4,339,798	July 13, 1982	Hedges et al.	364/412	Dec. 17, 1979
	4,340,903	July 20, 1982	Tamura	358/10	Aug. 6, 1980
	4,347,498	Aug. 31, 1982	Lee et al.	340/825.02	Nov. 21, 1979
	4,347,532	Aug. 31, 1982	Korver	358/183	Oct. 14, 1980

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	4,353,088	Oct. 5, 1982	den Toonder et al.	358/120	May 14, 1980
	4,354,201	Oct. 12, 1982	Sechet et al.	358/122	June 11, 1980
	4,355,372	Oct. 19, 1982	Johnson et al.	364/900	Dec. 24, 1980
	4,360,827	Nov. 23, 1982	Braun	358/85	June 2, 1981
	4,361,730	Nov. 30, 1982	Barber et al.	179/5 R	Aug. 29, 1980
	4,361,877	Nov. 30, 1982	Dyer et al.	364/900	Feb. 5, 1980
	4,364,081	Dec. 14, 1982	Hashimoto et al.	358/13	Apr. 16, 1981
	4,365,110	Dec. 21, 1982	Lee et al.	178/22.10	June 5, 1979
	4,367,548	Jan. 4, 1983	Cotten, Jr. et al.	370/3	Apr. 10, 1980
	4,367,557	Jan 4, 1983	Stern et al.	455/4	May 25, 1979
	4,375,579	Mar. 1, 1983	Davida et al.	178/22.10	Jan. 30, 1980
	4,375,651	Mar. 1, 1983	Templin et al.	358/191.1	July 27, 1981
	4,379,205	Apr. 5, 1983	Wyner	178/22.10	June 22, 1979
	4,381,522	Apr. 26, 1983	Lambert	358/86	Dec. 1, 1980
	4,383,257	May 10, 1983	Giallanza et al.	340/825.47	Dec. 12, 1980
	4,388,643	June 14, 1983	Aminetzah	358/123	Apr. 6, 1981
	4,388,645	June 14, 1983	Cox et al.	358/147	Apr. 13, 1981
	4,389,671	June 21, 1983	Posner et al.	358/124	Sept. 29, 1980
	4,390,898	June 28, 1983	Bond et al.	358/119	Mar. 23, 1981
	4,390,901	June 28, 1983	Keiser	358/147	Oct. 16, 1980

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EXAMINER INTTIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
	4,390,904	June 28, 1983	Johnston et al.	358/335	Sep. 20, 1979
	4,394,687	July 19, 1983	Hutt et al.	358/147	Apr. 30, 1980
	4,394,691	July 19, 1983	Amano et al.	358/194.1	July 30, 1981
	4,394,762	July 19, 1983	Nabeshima	371/38	Jan. 6, 1981
	4,395,757	July 26, 1983	Bienvenu et al.	364/200	Apr. 14, 1981
	4,396,947	Aug. 2, 1983	Cheung	358/124	Mar. 26, 1980
	4,398,216	Aug. 9, 1983	Field et al.	358/121	Sept. 19, 1980
	4,400,587	Aug. 23, 1983	Taylor et al.	179/27D	Aug. 25, 1981
	4,404,589	Sept. 13, 1983	Wright, Jr.	358/86	Oct. 21, 1980
	4,405,942	Sept. 20, 1983	Block et al.	358/119	Mar. 3, 1982***
	4,410,917	Oct. 18, 1983	Newdoll et al.	360/15	Sept. 14, 1981
	4,413,339	Nov. 1, 1983	Riggle et al.	371/38	June 24, 1981
	4,422,105	Dec. 20, 1983	Rodesch et al.	358/903	Sep. 30, 1980
	4,424,532	Jan. 3, 1984	den Toonder et al.	358/120	May 9, 1983***
	4,425,581	Jan. 10, 1984	Scweppe et al.	358/148	Apr. 17, 1981
	4,430,731	Feb. 7, 1984	Gimple et al.	370/30	Apr. 29, 1981
	4,433,207	Feb. 21, 1984	Best	178/22.09	Sept. 10, 1981
	4,434,323	Feb. 28, 1984	Levine et al.	178/22.17	June 29, 1981
	4,434,436	Feb. 28, 1984	Kleykamp et al.	358/118	July 13, 1981
	4,434,464	Feb. 28, 1984	Suzuki et al.	364/200	Mar. 31, 1981

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EXAMINER INITIAL	PATENT NUMBER	PATENT DATE	NAME	CLASS/ SUBCLASS	FILING DATE*
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	4,449,247	May 15, 1984	Waschka, Jr.	455/9	Jul. 30, 1980
	4,451,701	May 29, 1984	Bendig	179/2 TV	Oct. 11, 1983***
	4,467,139	Aug. 21, 1984	Mollier	178/22.08	Mar. 12, 1981
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EXAMINER INITIAL	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY	CLASS/ SUBCLASS	TRANS	LATION
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	1 554 411	Oct. 17, 1979	Great Britain	H04b 3/54		х
	2 034 995	June 11, 1980	Great Britain	H03J 7/18, 5/00		х
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<sup>\* -</sup> If pertinent
\*\*\* - Claims priority from parent application filed prior to Nov. 3, 1981

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